

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-14 are currently being prosecuted. The Examiner is respectfully requested to reconsider her rejections in view of the amendments and remarks as set forth below.

Entry of Amendment

Applicants submit that the entry of the present Amendment and full consideration thereof is proper since this Amendment is being filed with a Request for Continued Examination.

Rejection Under 35 U.S.C. § 103

Claims 1-13 stand rejected under 35 U.S.C. § 103 as being obvious over Marcuse et al. (U.S. Patent 6,385,383) in view of He (U.S. Published Application 2002/0136525). This rejection is respectfully traversed.

The Examiner relies on Marcuse et al. to show a waveguide structure 150 having a polymer core 155 embedded within a cladding layer 165. The index of refraction of the core can vary as the temperature varies to adjust the level of attenuation. The Examiner admits that this reference does not show the S-type waveguide or a teaching of leaving a portion of the waveguide exposed.

The Examiner relies on He to show a variable optical attenuator using an S-type waveguide. The Examiner states that the reference shows a waveguide having two curved waveguide portions.

Applicants submit that the claims are not obvious over this combination of references. First, Applicants agree that Marcuse et al. does not show an exposed surface of the core. Applicants also wish to point out that the He reference also does not show the core embedded in the slot with only one surface exposed. The Examiner has pointed out Figure 3 of this reference to show the electrode mounted on the waveguide. However, this Figure clearly shows that the waveguide is not embedded in the cladding layer, but shows the guide resting on top of the substrate 32. Thus, Marcuse et al. shows the core completely surrounded by the cladding layer and He only shows the guide resting on top of the substrate. Neither of the references show the concept of embedding the core within the slot of the cladding layer such that only one surface is exposed. In order to emphasize this difference over the prior art, Applicants have added the term "only" in regard to the surface to make it clear that the arrangement such as shown in He is not applicable. Applicants submit that neither of these references nor their combination show the feature of the core layer embedded in the slot of a cladding layer with only surface of the core exposed.

Applicants have also amended the final paragraph to make it clear that the waveguide element is an S-type double bend element. This is clearly seen in Figure 2 of the present application where section 21 bends in one direction and section 22 bends in the opposite direction. The Marcuse et al. reference shows only a linear element. He shows region 7 which is curved, but the exact nature of the curve is not disclosed in the reference. Paragraph 0021, lines 3 and 4 state the output waveguide is a continuation of a smooth sinuous curve of the input waveguide. Likewise, paragraph 0028, lines 2-4 have a similar description. It is not at all clear from this description the exact shape of the curve. In particular, it is not clear that this is an S-

type double bend curve as is presently claimed. Accordingly, Applicants submit that for this reason also claim 1 is allowable over the combination of two references.

Claim 9 is a method claim having similar limitations to claim 1. Applicants have also amended this claim to refer to the core having only one surface exposed in a similar fashion to claim 1. Also, the waveguide element is now described as an S-type double bend waveguide element in a similar fashion to claim 1. Applicants submit that this claim is likewise allowable for the same reasons recited above.

Claims 2-9 and 11-13 depend from claim 1 and as such are also considered to be allowable. In addition, each of these claims recite other features which make them additionally allowable. These include the particular materials utilized and the presence of the buffer layer and the temperature controller. Claims 11-13 in particular describe in more detail the shape of the waveguide as having two continuously curved portions formed according to the sine or cosine function. These features are also not seen in the references.

Claim 14 is a new claim which also describes in more detail the shape of the S-type waveguide. This specific formula is found on page 5 of the specification. Neither of the references teach this particular arrangement. Accordingly, Applicants submit that claim 14 is likewise allowable.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied upon by the Examiner, either alone or in combination. In view of this, reconsideration of the rejection and allowance of all the claims are respectfully requested.

If the Examiner has any questions or comments, please contact Robert F. Gnuse, Reg. No. 27,295 at the offices of Birch, Stewart, Kolasch & Birch, LLP.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of three (3) months to April 13, 2006 in which to file a reply to the Office Action. The required fee of \$1,020.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,

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